

Section I (Remarks)

A. Status of Claims and Comment on Propriety of Finality of November 24, 2010 Office Action

No claims have been amended by the present Response.

Thus, upon entry of the response, claims 37, 38, 40, 41, 43-62, 64, 65, and 67-72 remain pending and under examination. In the Office Action mailed November 24, 2010, on page 1, the examiner stated that claims 37, 38, 40, 41, and 43-72 are pending in the application. It is respectfully noted that claims 63 and 66 were cancelled in the Response mailed December 17, 2009. Such cancellation is noted by the examiner at page 2 of the Office Action. The current status identifier of each of claims 63 and 66 should therefore be “cancelled.”

It is well established “[u]nder present practice...” that “second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that is... neither necessitated by applicant's amendment of the claims, nor based on information submitted in an information disclosure statement filed [before the mailing date of the Final Office Action, but after a first Office Action on the merits]...” (MPEP §706.07(a)). On page 6 of the Final Office Action mailed November 24, 2010, the examiner stated that “[a]pplicant’s amendment necessitated the new ground(s) of rejection presented in this Office action.” Applicants respectfully disagree.

In the Response filed September 13, 2010, immediately preceding the Final Office Action, claim 37 was amended to include the text “wherein the water and/or oxygen sensitive material is selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof” to the description of the electrically conductive sensing element. In the November 24, 2010 Final Office Action, rejection of the claims under 35 U.S.C. §102 in view of Graff et al. and under 35 U.S.C. §103 in view of the combination of Takahashi and Graff et al. were both new rejections. These two new rejections are the only grounds for rejection in the November 24, 2010 Final Office Action.

As set forth in detail above, Graff et al. fails to describe an electrically conductive sensing element, as claimed, and Graff et al. is not cited with particularity regarding the added claim

language. Accordingly, rejection of the claims under 35 U.S.C. §102 in view of Graff et al. could have been raised prior to the November 24, 2010 Final Office Action. Similarly, rejection of the claims under 35 U.S.C. §103 over Graff et al. in view of Takahashi et al. could have been raised prior to the November 24, 2010 Final Office Action.

The rejection of the claims under 35 U.S.C. §§102 and 103 in view of Graff et al. are therefore new grounds of rejection that were not necessitated by Applicants' September 13, 2010 amendment of the claims, and therefore the finality of the November 24, 2010 Office Action is improper.

However, in view of the stated finality of the November 24, 2010 Office Action and to ensure substantive consideration of this response, a Request for Continued Examination is concurrently submitted herewith, together with payment of the appertaining RCE fees (see *infra*, "CONCLUSION").]

B. Rejection of Claims Under 35 U.S.C. §102

In the Final Office Action mailed November 24, 2010, the examiner rejected claims 37, 38, 40, 41, 43, 45-47, 49, 50-54, and 70-71 under 35 U.S.C. §102(a) as unpatentable over PCT/US03/13235 (hereinafter "Graff et al."). Applicants respectfully disagree.

Anticipation of a claim requires the disclosure in a single prior art reference of each element of the claim under consideration. (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987.)) Graff et al. do not disclose all elements of rejected claims 37, 38, 40, 41, 43, 45-47, 49, 50-54, and 70-71.

Graff et al. is cited by the examiner as "teach[ing] a multi-layer barrier coating on a flexible substrate which comprises alternating polymer and inorganic layers...[s]pecifically... an...electrically conductive sensing element...which decompose [sic] rapidly upon exposure to gas -oxygen- and liquids ...two electrodes...electrically connected to the sensing element...a base substrate supporting the sensing element...and a liner layer disposed between the sensing element and the base substrate comprising an organic polymer or inorganic polymer (PET)..." It is also alleged that "Graff et al. also teach calculation of oxygen (gas) permeability..." (Final Office Action mailed November 24, 2010, p. 2.) Based on the above statements, the examiner

concludes that Graff et al. anticipates the claimed invention. Applicants respectfully disagree with this characterization of Graff et al.

Applicants agree that, as provided in paragraphs [0009] and [00010], Graff et al. refers to a multi-layer barrier coating on a flexible substrate and a method of fabricating such a coating/barrier. However, such a coating/barrier differs from applicants' claimed sensor. Importantly, it is a stated purpose of the multi-layer barrier coating described in Graff et al. that it "exhibits improved resistance to gas and liquid permeation." (Abstract; emphasis added.) Such a characteristic was designed in response to a perceived need in the art, as described in the "Background of the Invention" section of Graff et al. (emphasis added):

"[0002] Many different types of products, such as electronics, medical devices, and pharmaceuticals, are sensitive to gases and liquids, which can cause deterioration of the product over a period of time. In particular, various electronic devices are adversely affected by moisture that degrades insulation and initiates corrosion.

"[0003] Some of these devices are particularly sensitive to the environment. For example, devices utilizing organic light-emitting materials are potential candidates for a great variety of displays, such as digital watches, telephones, laptop computers, pagers, cellular telephones, calculators and the like. Unlike inorganic semiconductor light emitting devices, organic light-emitting devices (OLEDs) are relatively inexpensive to fabricate and potentially can be manufactured on flexible polymer substrates, which may further expand their utility in displays...

"[0004]...In particular, as those skilled in the art will recognize, it is typically desirable that such encapsulation maintain the above-referenced levels of resistance to oxygen and moisture when subjected to the following tests: 1. Temperature cycling...; 2. Exposure to 95% relative humidity at 60°C ; 3. Flex testing...; and 4. Calcium test...

"[0008] While the resistance to liquid and gas permeation of substrates having barrier coatings known in the art is considerable, the resulting films are still sufficiently permeable to limit the lifetime of the environmentally sensitive devices, particularly in applications requiring prolonged periods of operation and/or exposure to hot and humid environments. Thus, there is a need in the art of for an improved flexible lightweight environmental barrier coating."

In Graff et al., the intent is to prevent reaction with the environment. By contrast, applicants' claimed sensor is designed to react with water or oxygen and detect such reaction.

The examiner's attention is respectfully directed to independent claim 37. Claim 37 is directed

to “[a] sensor for measuring gas permeability of a test material...” Such sensor contains, in relevant part, “an electrically conductive sensing element...” It is the examiner’s assertion that embodiment 50 of Figure 1B of Graff et al. is analogous to applicants’ cited sensing element. Applicants strenuously disagree with such conclusion.

Element 50 of Graff et al. is referred to as an “environmentally sensitive device” (Graff et al., para. [0050]). However it is not a sensor, nor is it used for sensing. Instead, it refers to a display device such as a liquid crystal display (LCDs) and OLEDs (*see*, for example, paragraph [00049] of Graff) which is susceptible to environmental conditions, and which should be protected from such environmental conditions. The concept of a “sensor for measuring gas permeability of a test material” is not disclosed at all in Graff et al.

Further, as recited in claim 37 of the present application, an “electrically conductive sensing element...” of applicants’ sensor “comprises a water and/or oxygen sensitive material, wherein the reaction of said material with water or oxygen when the sensing element is contacted with water and/or oxygen results in a change in the electrical conductivity of the sensing element, wherein the water and/or oxygen sensitive material is selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof.”

Graff et al., refers only to a multi-layer barrier coating on a polymer substrate. Graff et al. fails to disclose an electrically conductive sensing element comprising a water and/or oxygen sensitive material used for the measurement of gas permeability that may be selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof.

Furthermore, Graff et al. does not disclose that reaction of water and/or oxygen with the water and/or oxygen sensitive material results in a change in the electrical conductivity of the sensing element.

Graff et al. does not describe a “...sensor for measuring gas permeability of a test material...” “...a water and/or oxygen sensitive material selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of

elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof...,” nor does Graff et al. describe “...a water and/or oxygen sensitive material, wherein the reaction of said material with water or oxygen... results in a change in the electrical conductivity of the sensing element...” Therefore, claim 37 is novel in view of Graff et al.

Claims 38, 40, 41, 43, 45-47, 49, and 50-54 are of dependent form under claim 37 and incorporate all limitations of the claim from which they depend. Claims 70 and 71 are independent method claims. Each of independent claims 37, 70 and 71 contains the limitations a “...sensor for measuring gas permeability of a test material...” “...a water and/or oxygen sensitive material selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof...” and “...a water and/or oxygen sensitive material, wherein the reaction of said material with water or oxygen... results in a change in the electrical conductivity of the sensing element...” Each of independent claims 37, 70 and 71 is correspondingly novel in view of Graff et al.

Since Graff et al. do not describe a sensor, system or method as set forth in claims 37, 38, 40, 41, 43, 45-47, 49, 50-54, and 70-71, Graff et al. do not anticipate the claimed invention. Accordingly, withdrawal of the rejection of claims 37, 38, 40, 41, 43, 45-47, 49, 50-54, and 70-71 under 35 U.S.C. § 102(a) as being anticipated by Graff et al. is respectfully requested.

C. Rejection of Claims Under 35 U.S.C. §103

In the Final Office Action mailed November 24, 2010, the examiner rejected claims 44, 48, 51-62, 64, 65, 67, 69 and 72 under 35 U.S.C. § 103 as unpatentable over Graff et al. in view of U.S. Patent No. 4,595,485 (hereinafter “Takahashi et al.”). Applicant respectfully traverses such rejection.

Rejected claims 44, 48, 51-62, 64, 65, and 67 are of dependent form under claim 37. Similarly, rejected claim 69 depends from independent claim 68 and rejected claim 72 depends from independent claim 71. Dependent claims incorporate all limitations of the claim from which they depend.

As addressed in detail above, Graff et al. describes a multi-layer barrier coating on a flexible

substrate and a method of making it, but fails to describe a sensor. Particularly, Graff et al. fails to describe a “...sensor for measuring gas permeability of a test material...” “...a water and/or oxygen sensitive material selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof...,” or “...a water and/or oxygen sensitive material, wherein the reaction of said material with water or oxygen... results in a change in the electrical conductivity of the sensing element...” The “sensing element” *i.e.* embodiment 50 of Figure 1B referred to by the examiner, is not a sensor, but is an “environmentally sensitive device,” which is subject to damage or destruction if permitted to contact the environment, but which is not used for sensing or measuring. In particular, such an “environmentally sensitive device” is a display device such as a liquid crystal display (LCD) or an OLED.

Each of independent claims 37, 68 and 71 and, by virtue of their dependent nature, all of claims 44, 48, 51-62, 64, 65, 67, 69 and 72, contain the limitations of a “...sensor for measuring gas permeability of a test material...” and “...a water and/or oxygen sensitive material selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof...” Graff et al. fails to anticipate a sensor, system or method incorporating such elements.

In order to achieve applicants’ claimed sensor from Graff et al., a person skilled in the art would have to replace the display device in Graff et al. with an electrically conductive sensing element that comprises a water and/or oxygen sensitive material, wherein the water and/or oxygen sensitive material is selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof. The electrically conductive sensing element would then need to be exposed to the environment in order to function as claimed.

However, there is no motivation at all for a person skilled in the art to modify the process of Graff et al. in this manner, given that Graff is directed to the design of a multi-layer barrier coating directed to achieving “improved resistance to gas and liquid permeation” (Abstract; emphasis added). The display device in Graff merely serves to illustrate how the multi-layer

barrier coating can be positioned with respect to the device in order to protect it from moisture and gases (see, for example, paragraph [00049] of Graff). The concept of a sensor for measuring gas permeability of a test material is not disclosed in Graff.

Furthermore, it is well established that “[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).” (MPEP §2143.01) Replacement of the display device of Graff et al. with an electrically conductive sensing element of applicants’ claimed sensor would necessarily require exposure to the environment in order to function properly. However, it is an express intent of Graff et al. to protect the display device from environmental exposure. Accordingly, **the modification of Graff et al., as proposed by the examiner would change the principle of operation of the barrier/coating of Graff et al.**

Therefore, claims 44, 48, 51-62, 64, 65, 67, 69 and 72 are not obvious in view of Graff et al. Citation of Graff et al. in combination with Takahashi et al. fails to remedy the deficiencies of Graff et al.

The combination of Graff et al. and Takahashi et al. fails to describe “...a water and/or oxygen sensitive material selected from the group consisting of metals of Group I of the periodic system of elements, metals of Group II of the periodic system of elements, iron, tin, chromium, conductive polymers, and mixtures and combinations thereof...” Such element is recited in all of claims 37, 68 and 71, from which rejected claims 44, 48, 51-62, 64, 65, 67, 69 and 72 depend.

Graff et al. in view of Takahashi et al. fail to provide any derivative basis for the invention recited in claims 44, 48, 51-62, 64, 65, 67, 69 and 72. Accordingly, no basis of *prima facie* obviousness of the claimed invention is presented by such cited references.

Based on the foregoing, Graff et al. in view of Takahashi et al. fails to provide any logical basis for the sensor, system or method recited in claims 44, 48, 51-62, 64, 65, 67, 69 and 72. Graff et al. in view of Takahashi et al. does not render the claimed invention obvious. Accordingly, withdrawal of the rejection of claims 44, 48, 51-62, 64, 65, 67, 69 and 72 under 35 U.S.C. § 103(a) as being obvious over Graff et al. in view of Takahashi et al. is respectfully requested.

D. Comment on Claim 68

In the Final Office Action mailed November 24, 2010, the examiner did not raise any rejection of claim 68. As such, it appears that claim 68 is in condition for allowance. Acknowledgement by the examiner of such allowability is respectfully requested.

CONCLUSION

Based on the foregoing, all of applicants' pending claims 37, 38, 40, 41, 43-62, 64, 65, and 67-72 are patentably distinguished over the art, and in form and condition for allowance. The examiner is requested to favorably consider the foregoing and to responsively issue a Notice of Allowance.

The time for responding to the November 24, 2010 Office Action without extension was set at three months, or February 24, 2011. Applicants hereby request a two month extension of time under 37 CFR § 1.136 to extend the deadline for response to April 24, 2011. Payment of the extension fee of \$490.00 specified in 37 C.F.R. § 1.17(a)(2) and the RCE fee of \$810.00 specified in 37 C.F.R. § 1.17(e), as applicable to large entity, is being made by on-line credit card authorization at the time of EFS submission of this Response. Should any additional fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 08-3284, as necessary.

If any issues require further resolution, the examiner is requested to contact the undersigned attorneys at (919) 419-9350 to discuss same.

Respectfully submitted,

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Enclosures:

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